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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/600,735	06/20/2003	Bruce Beakley	TRLG002-US0	9837

7590 04/29/2005

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EXAMINER	
JONES, JUDSON	

ART UNIT	PAPER NUMBER
2834	

DATE MAILED: 04/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/600,735	BEAKLEY, BRUCE	
	Examiner	Art Unit	
	Judson H. Jones	2834	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 April 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7,9-15,18 and 19* is/are rejected.

7)☒ Claim(s) *8,16,17 and 20* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *04 April 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

The indicated allowability of claims 1, 2, 9 and 10 is withdrawn in view of the newly discovered reference(s) to Watanabe, Mishler and Horng. Rejections based on the newly cited reference(s) follow.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1, 2, 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Watanabe 6,777,832 B2 in view of Mishler 6,495,935 B1 and Horng 6,040,649. Watanabe discloses a bearing rail structure 22 with bearing surfaces 32 and an array of magnets 21 and also discloses bearing block assemblies 31 and a connecting assembly 15 with a linear motor coil assembly 11 attached thereto. Watanabe discloses in column 6 lines 47-49 that rails 32 are secured to the yoke 22. Horng teaches in column 4 lines 41 ½ to 45 ½ that making motor parts unitary by casting them instead of assembling with bolts or other means makes the parts more reliable and reduces assembly time. Since Horng and Watanabe are from the same field of endeavor it would have been obvious at the time the invention was made for one of ordinary skill in the art to have utilized casting as a means for increasing the reliability of the bearing rail structure by making it unitary. Watanabe as modified by Horng shows bearing surfaces but does not specify if the bearings are the rolling type. Mishler shows rolling bearings for a linear motor in figure 2. Since Mishler and Watanabe as modified by Horng are from the same field of endeavor it would have been obvious at the time the invention was made for one of ordinary skill in the art to have utilized rolling type bearings in the linear motor glide apparatus of Watanabe.

In regard to claims 2 and 10, the connecting structures of Watanabe will inherently conduct heat away from the linear motor coil assembly.

Claims 3, 7, 11 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Watanabe as modified by Mishler and Horng as applied to claim 1 and further in view of Shizuka et al. 4,506,180 B1. Watanabe as modified by Mishler and Horng discloses the linear motor glide apparatus but does not disclose anything about the coefficients of thermal expansion for the motor elements. Shizuka et al. teaches in column 4 lines 44-50 there are typically different rates of thermal expansion for coils and other parts of the motor. Coils are typically made of aluminum or copper, materials with a high rate of thermal expansion while the rest of the motor is typically made of steel with a lower rate of thermal expansion. Since Shizuka et al. and Watanabe as modified by Mishler and Horng are from the same field of endeavor it would have been obvious at the time the invention was made for one of ordinary skill in the art to have made the coil assembly from aluminum or copper and the stator yoke from steel. This would result in the coil assembly having a higher coefficient of thermal expansion than the stator.

Claims 4-6 and 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Watanabe as modified by Mishler and Horng as applied to claims 1, 3, 8 and 11 and further in view of Miyake 4,633,112. Watanabe as modified by Mishler and Horng discloses the linear motor glide apparatus but does not disclose bolts with a radial clearance to allow adjustment of the apparatus. Miyake teaches in figure 2 and in column 5 lines 34-40. Since Miyake and Watanabe as modified by Mishler and Horng are from the same field of endeavor it would have been obvious at the time the invention was made for one of ordinary skill in the art to have

utilized bolts with a radial clearance in order to allow precise placement of the motor elements in situations where the parts may slightly vary in size.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 18 and 19 are rejected under 35 U.S.C. 102(a) as being anticipated by Miyamoto et al. 6,191,507 B1. Miyamoto et al. discloses in figure 1 a core of a linear motor comprising sections 31, 32 with a core element 33 positioned at the end of the linear motor core with windings wrapped around core element 33 so that current induced in the windings provides an anti-cogging force. (Current is also induced in the windings around core elements 31, 32 and this current also provides an anti-cogging force.) Core element 33 also is provided with current to make it a linear motor core section, but applicant's claim language does not prohibit this. In claim 19 applicant mentions that a current is applied to the core element positioned at the end of the linear motor core. This current provides an anti-cogging force by providing a driving force for the linear motor. Thus applicant's core element positioned at the end of the linear motor is another part of the linear motor drive. The anti-cogging force provides an additional drive force to oppose the cogging action of the motor.

Applicant's device is different from the prior art, but the language of claims 18 and 19 does not define over the prior art of record. In Miyamoto et al. the core elements 31, 32, 33 all receive identical currents that are phase shifted from one another. Applicant's core positioned at

the end of the linear motor core either does not receive any current or it receives a current different from the drive current applied to the linear motor core elements.

Allowable Subject Matter

Claims 8, 16, 17 and 20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The prior art of record does not disclose or teach a linear motor glide apparatus having bearing block assemblies for a bearing rail structure with bearing rail surfaces with the bearing block assemblies connected by a connecting structure where a coil is affixed to the connecting structure and where the bearing rail structure has indicator marks as recited in claim 8. The prior art of record does not disclose or teach a linear motor glide apparatus having bearing block assemblies for a bearing rail structure with bearing rail surfaces with the bearing block assemblies connected by a connecting structure where a coil is affixed to the connecting structure and with an anti-cogging mechanism as recited in claims 16 and 20. In column 1 lines 29-32 Watanabe teaches away from providing an anti-cogging element in his device.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Katsuki et al. 6,724,104 B2 discloses a bearing structure having four bearing rail surfaces that are described as being a roller guide in column 3 lines 46-55. Magnets 30, 31 are on a surface of element 28 with element 28 being bolted to the bearing rail structure. Bearing block assemblies are the two sides of element 21 with the middle part of element 21 being the

connecting portion. Windings 26, 27 are affixed to element 24 which is in turn attached to the connection portion.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Judson H. Jones whose telephone number is 571-272-2025. The examiner can normally be reached on 8-4:30 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Darren Schuberg can be reached on 571-272-2044. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Judson Jones 4/26/2005

THANH LAM
PRIMARY EXAMINER